

**GEOBULLETIN**  
**October 24, 2008**

Geobulletin is distributed weekly, on Friday by E-mail. Contributions are requested! Anything and everything (well almost) that you want to see in print. If you have a news item, a request, an announcement etc. email it to geodept@geology.wisc.edu. or leave it at the reception desk, Room 236 by noon on Wednesdays.

**LECTURE SCHEDULE** ---- All lectures (unless otherwise noted) are held on Fridays at 3:30 PM in AB20 (Laudon Lecture Hall). Coffee & cookies are served in the lobby starting at 3:15 PM.

**FALL 2008 WEEKS LECTURE SCHEDULE**

**October 24** ----- Donald Mkhonto – UW

**FRIDAY, OCT. 24TH AT 3:30 PM, AB20 WEEKS HALL**

**MODELING ORGANIC-MEDIATED CALCITE MORPHOLOGY CONTROL AS POTENTIAL BIOSIGNATURES**

Various organic molecules such as amino acids, acidic peptides, and proteins can exert a significant control on modulating crystal growth and dissolution along specific crystallographic directions, resulting in crystals of unique morphology and size that are different from their inorganically-grown counterparts. In the present study, we used molecular dynamics (MD) simulations to calculate the adsorption energies of citrate and succinate (tricarboxylic and dicarboxylic acids), L-aspartate, L-lysine and L-leucine (amino-acids) at steps in different directions on the {104} cleavage face of calcite (CaCO<sub>3</sub>), in order to determine the molecular-level mechanisms controlling on crystal morphology. The results shows that when succinate adsorbs on the surface, it attaches to the surface calcium cations, resulting in elongation of surface Ca – O<sub>calcite</sub> bonds at the adsorption site, compared to corresponding distances in the presence of water alone, consistent with increased dissolution rate observed experimentally in the presence of succinate. Also, step surface energies are lower when succinate is adsorbed compared to water alone, explaining the appearance of steps in the unusual [42  $\bar{1}$ ] and [010] directions. Finally, the general trend of calculated succinate adsorption energies at steps is [  $\bar{4}41$ ] > [42  $\bar{1}$ ] > [010], which is consistent with the evolution of morphology of dissolution etch-pits (and conversely, growth hillocks). The adsorption of the organic acids and the amino acids averaged over all the step directions and the ideal {104} face becomes more favorable as molecular charge increases. There is no correlation, however, with molecular charge for adsorption energies at individual step directions. Thus, MD simulations studies provide mechanistic basis for organic-mediated morphology control, which may serve as biosignatures on Earth, and potentially on Mars and other worlds.

**October 31** ----- Rick Law – VPI

**November 7** ----- Peter Mozely – New Mexico Tech

**November 14** ----- Steve Wojtal – Oberlin College

**November 21** ----- Joseph Licciardi --- University of New Hampshire

**November 28** ----- Thanksgiving Recess

**December 5** ----- David Deamer

**December 12** ----- Stephen Hasiotis

**December 19** -----

**2009 Internships for Student Research – Regarding this internships,more info/flyers are in the Dept.Office. If you are interested, Please feel free to stop and view those informations.**

DOSECC internships promote student involvement in projects where drilling has provided data and materials for study. Internship funding will be available in the summer of 2009. Application details are listed on the web site [www.dosecc.org](http://www.dosecc.org)

Become a Lunar Exploration Summer Intern:

The Lunar and Planetary Institute(LPI) is hosting a special summer intern program to evaluate possible landing sites for robotic and human exploration missions. The 10 week program runs from June 1, 2009 through August 8, 2009.

# GEOBULLETIN

## October 24, 2008

[www.lpi.usra.edu/lunar\\_intern/](http://www.lpi.usra.edu/lunar_intern/)

Application Deadline: January 23,2009

Instruments Grant for Grad Student Research - Deadline: January 1, 2009

The grant provides up to \$10,000 of Decagon's research instruments to a graduate student studying any aspect of environmental science, with emphasis on those studies that propose continuous wireless monitoring of the natural environment as part of their research methods. Application package available online at [www.decagon.com/gaharris](http://www.decagon.com/gaharris)

\*\*\*\*\*

### Students Required to Work at Colima

Additional enthusiastic students required to assist with research at Volcán de Colima, Mexico. The minimum period is 1 month, but those who can stay longer have priority. Various projects are in progress, the overall goal being to produce a dynamic model to explain the volcano's behaviour. Time will be spent assisting with field and lab work, including: routine collection of thermal data, water and gas samples, maintenance of installed sensors, development of new systems, geophysical surveys etc. Analysis will be carried out of a variety of data types. Applicants should have or be working towards a degree in geology or a related earth science with plenty of field experience. Some knowledge of Spanish would be useful, and a reasonable level of fitness is necessary for hiking at altitude.

Applicants with some programming experience, principally Matlab, will be particularly favoured. There may be the possibility to visit some of Mexico's other active volcanoes for other projects.

This is an excellent opportunity to obtain experience working on an active volcano and to use various field, laboratory and analysis techniques. It could be of great benefit to someone waiting to enter graduate studies in volcanology. No salary can be paid, but cheap accommodation is available. Further information can be found on the website: <http://www.ucol.mx/ciiv/>. If interested please email Dr. Nick Varley, Centre of Exchange and Research in Volcanology, Facultad de Ciencias, Universidad de Colima at [nick@ucol.mx](mailto:nick@ucol.mx).

### POSITION OPENINGS:

- Intern in San Diego with Top-rated USGS Hydrologists
- Tenure-Track Faculty Position in Earth System Science
- Job opening at Indiana-Purdue University Fort Wayne (IPFW) for a new assistant professor (tenure track).
- Entry-level Hydrogeologist - Midwest's leading environmental, geotechnical and construction engineering firm.
- The USGS, in collaboration with the University of Alaska, Fairbanks, is seeking a postdoctoral fellow to study slow slip events, tremor, and earthquakes in Alaska and the Aleutian arc.
- The Department of Earth Science at the University of California, Santa Barbara, has a tenure track position, assistant professor rank, in Coastal Processes.
- Technician Positions Available in GeoIsoChem. Inc, Los Angeles.
- The Swiss Seismological Service (SED; [www.seismo.ethz.ch](http://www.seismo.ethz.ch)) at ETH Zürich is expanding its interdisciplinary center on seismic hazard modeling and invites applications for three research seismologists at a junior or senior level.
- The Swiss Seismological Service (SED; [www.seismo.ethz.ch](http://www.seismo.ethz.ch)) at ETH Zürich is expanding its interdisciplinary center on seismic hazard modeling and invites applications for three software engineers within the Information Technology Group at the SED.
- Permanent stable isotope laboratory manager position at University of Basel

### POSITION OPENINGS:

#### Intern in San Diego with Top-rated USGS Hydrologists

Our USGS office in San Diego is fortunate to have an abundance of nationally and internationally-reknown hydrologists, and a variety of top-rated applied water-resource projects. We are looking for talented, well-educated students or recent graduates to mentor as interns. The position(s) are available for summer 2009, but could continue for several years if the candidate were to attend graduate school in the San Diego area.

The applied research projects you would join are regional in nature, tend to be long-term, and involve equal parts geology, hydrology, chemistry, and some biology. The purpose of each project is to create an integrated understanding of geology, water supply, contamination, land deformation, seawater intrusion, and endangered species, and to provide this understanding to the public who funds the work. All projects involve extensive field work, data analysis and interpretation, developing and calibrating of ground-water flow models, creating custom optimal water-management models, giving presentations, and writing reports. Each project has an applied research component that differentiates it from traditional government or private-sector work.

Examples of the projects can be found at:

<http://ca.water.usgs.gov/sanbern>

GEOBULLETIN  
October 24, 2008

<http://ca.water.usgs.gov/sandiego>  
<http://ca.water.usgs.gov/temecula>  
<http://ca.water.usgs.gov/owens>

Benefits to the intern would include interaction with an unusually talented group of hydrologists; acquiring a comps, thesis, or dissertation project; and living and working in a Mediterranean climate.

I look forward to talking with you,

Wes Danskin Carleton College (1978), Stanford (1986)  
Research Hydrologist  
wdanskin@usgs.gov  
858-663-6832  
<http://ca.water.usgs.gov/bios/wdanskin.html>

\*\*\*\*\*

[Tenure-Track Faculty Position in Earth System Science](#)

The Geology Program in the College of Science and Technology, Texas A&M University-Corpus Christi, invites applications for a tenure-track faculty position at the Assistant Professor level in Earth System Science with a starting date of September 2009, pending available funding. We are looking for a broadly trained Earth System Scientist, who uses the geologic record to investigate coastal, oceanic, watershed, or atmospheric processes of ancient and/or modern systems. Applications are especially encouraged from individuals whose research interests include, but are not limited to global change/paleoclimatology, sedimentology, low-temperature geochemistry, and/or paleoceanography. We are looking for energetic candidates to pioneer new research directions on our growing campus. They should be able to engage in interdisciplinary research involving our existing programs and build on current research strengths in the Department of Physical and Environmental Sciences. The successful candidate will be expected to develop a vigorous, externally funded research program and be able to teach undergraduate and graduate courses in geology as well as other courses supporting interdisciplinary degree programs in Environmental Science (M.S.) and Coastal and Marine System Science (Ph.D.). The position will be rooted in the Geology program, which offers the B.S. degree, and the successful candidate will have the opportunity to supervise graduate students in the Environmental Science and Coastal and Marine System Science programs. For further information about the department and individual degree programs see <http://pens.tamucc.edu>.

A Ph.D. is required at the time of appointment and some post-doctoral experience is desirable. Texas A&M University-Corpus Christi is a doctoral Hispanic Serving Institution located on the Gulf of Mexico with a modern campus overlooking Corpus Christi Bay. With over 9,100 students, the university offers a wide array of academic programs with 18% of the students enrolled in graduate programs. Applications must include a cover letter, statement of research and teaching interests, a curriculum vita, and the names and phone numbers of four or more references. Materials should be sent to:

Mr. Ken Brown, Senior Administrative Assistant  
College of Science and Technology  
Texas A&M University-Corpus Christi  
6300 Ocean Drive, Unit 5806  
Corpus Christi, Texas 78412-5806

or sent as a formatted e-mail attachment to [kenneth.brown@tamucc.edu](mailto:kenneth.brown@tamucc.edu). The position will remain open until filled but preference will be given to applicants submitting all requested documentation by November 21, 2008. Texas A&M University-Corpus Christi is an Affirmative Action/Equal Employment Opportunity employer committed to excellence (<http://www.tamucc.edu/~hrweb/>).

\*\*\*\*\*

[A job opening at Indiana-Purdue University Fort Wayne \(IPFW\) for a new assistant professor \(tenure track\).](#)

We are casting our nets wide and considering applicants from all research areas, though a successful applicant will need to teach Structural and Geomorph at the undergraduate level. A mineralogist or petrologist who could teach these undergraduate courses, contribute to the introductory-level curriculum, and make use of existing facilities would be favorably considered. We are prepared to reduce initial teaching loads to help someone without a background in structural or geomorph develop these courses.

IPFW is typical of many regional universities. Teaching loads are high, but not punitive. Publication of research is essential. Starting salary matches the national average for public universities similar to IPFW. Cost of living in Ft. Wayne is low.

The full job announcement is available at <http://www.geosci.ipfw.edu/advert.html>. Applicants need to be ABD near completion, or have the Ph.D in hand. We will begin to review applications in early November.

Please point out this opportunity to any students (or colleagues) that might fit the requirements. Feel free to have them contact me by email for more information.

Anne Argast

**GEOBULLETIN**  
**October 24, 2008**

Chair, Search Committee  
Dept. of Geosciences  
Indiana University-Purdue University Fort Wayne (IPFW)  
Argast@ipfw.edu

\*\*\*\*\*

**ENVIRONMENTAL HYDROGEOLOGIST**

As one of the Midwest's leading environmental, geotechnical and construction engineering firms, STS takes great pride in providing high quality, state of the practice services worldwide for over 50 years. We have a challenging opportunity available in Madison, WI location for a highly-motivated, career-oriented entry-level Hydrogeologist.

Successful candidate will provide field and office support on projects including environmental assessments, site characterization, and environmental restoration and remediation. Requirements include a B.S. in geology with a strong hydrogeology background. Groundwater modeling and environmental consulting experience a plus. Excellent communication skills (verbal/written) and ability to perform field activities are essential. OSHA 40-hour training is desirable but not essential.

We offer a competitive benefits package. Please forward resume to:

Kevin L. Brehm, P.E.  
Associate Engineer/  
Wisconsin and Vernon Hills  
Sciences Department Manager  
D 414.577.1314  
C 262.374.0337

AECOM  
11425 West Lake Park Drive  
Milwaukee, WI 53224  
T 414.359.3030 F 414.359.0822  
[www.sts.aecom.com](http://www.sts.aecom.com)

\*\*\*\*\*

The USGS, in collaboration with the University of Alaska, Fairbanks, is seeking a postdoctoral fellow to study slow slip events, tremor, and earthquakes in Alaska and the Aleutian arc. This opportunity promises to provide key observational constraints and insights related to one of the newest and most exciting discoveries in solid Earth science. Applicants may propose a variety of creative research directions. For example, proposals which address the relationship, or lack thereof, between non-volcanic tremor and volcanic tremor are welcome.

The application deadline for this opportunity is November 12, 2008. The successful applicant will be expected to start work at the USGS in Anchorage, Alaska in late 2009 or early 2010. If you would like more information about this project, please contact one of the project supervisors (listed below), and visit the Mendenhall Postdoctoral Research Fellowship Program webpage at <http://geology.usgs.gov/postdoc/2010/opps/opp32.html>.

\*\*\*\*\*

**GEOSYNTEC CONSULTANTS** has Ongoing Needs for Engineers and Scientists. We are seeking motivated, passionate, technical candidates to join us

**Our ideal candidate... holds an advanced degree in engineering or science,•  
enjoys superior communication and interpersonal skills,•  
demonstrates academic achievement, and•  
preferably possesses the ability to become professionally licensed.•**

Since 1983, Geosyntec has provided clients with environmental, geotechnical, and hydrological engineering consulting and design services. We are an employee-owned company with offices throughout the United States and in Canada, Malaysia, and the United Kingdom. Nationally known for our practice leadership, client service, and innovation, our professionals continue to develop new technology applications and capabilities. Our applied research partnerships with leading universities, NASA, other Federal agencies and others are producing better methods for all of our practice areas. We strive to provide a stimulating, progressive, and friendly work environment that will enable us to continue to recruit and retain great staff to provide the best possible service and value to our clients.

**Our Practice Areas**

Environmental Engineering - Geotechnical Engineering -Water & Natural Resources  
Risk Assessment & Toxicology -Site Investigation & Remediation -Waste Management

**GEOBULLETIN**  
**October 24, 2008**

Construction Management Brownfields/Redevelopment

**Multiple openings available. Interested?**

[www.geosyntec.com](http://www.geosyntec.com)

*We are an Equal Opportunity/Affirmative Action/Equal Access employer. We welcome the applications of all qualified males, females, minorities, veterans, and the disabled.*

\*\*\*\*\*

**The Department of Earth Science at the University of California, Santa Barbara seeks a geoscientist who conducts creative research in coastal processes**, broadly defined, and could include sediment transport/deposition, source to sink dynamics, geochemical/biogeochemical cycling, sedimentary petrology, sedimentation, coastal energy resources and impacts of sea level change. A field orientation combined with expertise in analytical and/or computational tools is preferred. The appointee is expected to develop a vigorous, externally funded research program and teach both undergraduate and graduate courses. This tenure-track appointment will be at the rank of Assistant Professor to begin July 1, 2009 or later. Review of applications will commence December 8, 2008. The position is open  
Until filled.

A Ph.D. is required at the time of appointment. Review of applications will begin December 8, 2008, and will remain open until filled. Applicants should submit a PDF file containing a letter of application, curriculum vita, a description of teaching and research objectives and accomplishments, and contact information for three referees. The application file should be submitted via email to [CoastalProcesses@geol.ucsb.edu](mailto:CoastalProcesses@geol.ucsb.edu). Queries about this position can be directed to Edward Keller ([keller@geol.ucsb.edu](mailto:keller@geol.ucsb.edu))  
The Department is especially interested in candidates who can contribute to the diversity and excellence of the academic community through research, teaching, and service. For more information about the department, visit our webpage ([www.geol.ucsb.edu](http://www.geol.ucsb.edu)). UCSB is an Equal Opportunity/Affirmative Action employer.

\*\*\*\*\*

**Technician Positions Available in GeoIsoChem. Inc, Los Angeles.**

We seek a technician with M.S.-level for research opportunities in our laboratories at GeoIsoChem, a small research company in Los Angeles. We are looking for broadly trained individuals interested in applications of stable isotopes to Energy, environment, pharmaceutical, forensics, ecology, geology and food adulteration.

The position is available immediately; the searches will remain open until filled, but we hope to have the position filled no later than December 2008. We seek quantitatively oriented individuals interested in a collaborative research environment, but able to work independently as needed.

Interested applicants should submit the following applications materials via e-mail: (a) a PDF format letter of interest describing your background, qualifications, career objectives, and the names and addresses of 2-3 individuals who will write letters in support of the applicant, (b) a complete curriculum vitae in PDF format, and (c) PDFs of no more than 3 publications by the applicant. Applicants should indicate when they could join our research program if offered a position.

We offer extensive analytical capacities for stable isotope analyses and a collaborative research environment.

All application materials or other questions should be e-mailed to [jhou@geoisochem.com](mailto:jhou@geoisochem.com) or [lei.holly@gmail.com](mailto:lei.holly@gmail.com) at your earliest convenience.

\*\*\*\*\*

**The Swiss Seismological Service (SED; [www.seismo.ethz.ch](http://www.seismo.ethz.ch)) at ETH Zürich** is expanding its interdisciplinary center on seismic hazard modeling and invites applications for three research seismologists at a junior or senior level.

The successful candidates will join an international team focused on creating a state-of-the-art seismic hazard and risk modeling and validation environment, including input data, hazard computational infrastructure, model validation, and distribution. The positions will be associated with the new Global Earthquake Model (GEM) and Seismic Hazard Harmonization in Europe (SHARE) efforts. GEM is the public-private partnership initiated by the OECD to build an independent standard for calculating and communicating earthquake risk worldwide. SHARE is an EC-funded project to harmonize hazard products and zonations for engineering applications.

Candidates must have a PhD in geophysics, earthquake engineering, or a related field and a proven record of excellence in conducting research in a team environment. Expertise in one or more of the following areas is highly desirable: regional seismic networks and catalogs, seismic rupture and/or ground motion modeling, probabilistic hazard or risk modeling, statistical model validation, computational geophysics, and insurance/reinsurance industry standards and practices. Successful senior candidates may participate in undergraduate and graduate level teaching at ETH. English and German are working languages in the research groups. The selection process starts immediately and will continue until all positions are filled. The positions will be granted for a minimum duration of two years, with the possibility of extension, and may be filled at part or full time.

The SED offers an attractive working environment in Zurich, consistently rated among the cities with the best quality of life worldwide. SED provides good opportunities for personal and professional development, a competitive salary depending on experience and performance, and an excellent benefits package.

**GEOBULLETIN**  
**October 24, 2008**

For more detailed information, please contact Dr. Greg Anderson +41 44 633 24 80 or Prof. Domenico Giardini +41 44 633 26 10.

Please apply online at [www.jobs.ethz.ch](http://www.jobs.ethz.ch) including a cover letter, your CV, a brief statement of research interests, and the names and contact information of two references. In cases of technical problems regarding the application process, please send your written application by paper with the keyword HAWI 762 to Mr. Hans-Peter Widmer, Human Resources, P.O. Box, 8092 Zürich.

\*\*\*\*\*

**The Swiss Seismological Service (SED; [www.seismo.ethz.ch](http://www.seismo.ethz.ch)) at ETH Zürich** is expanding its interdisciplinary center on seismic hazard modeling and invites applications for three software engineers within the Information Technology Group at the SED.

The successful candidates will join an international team focused on creating a state-of-the-art seismic hazard and risk modeling and validation environment. They will focus on the core information technology infrastructure, including relational databases for input and output data, project Web portals, and a Web service-oriented architecture integrating all these systems. They will also work with other team members and contractors worldwide on centralized tools for computing seismic hazard and risk.

- Position one, with emphasis on relational database systems and interfaces, requires significant expertise and recent work experience with relational database design, database systems and interfaces to them, including use of tools such as PostgreSQL, MySQL, JDBC, and Hibernate.
- Position two, with emphasis on Web portals and interfaces, requires significant expertise and recent work experience with open-source Web development tools such as Struts, JavaScript, PHP, and AJAX and good working knowledge of Web authoring standards including HTML, CSS, and XML. Experience with Portal environments such as GridSphere or JetSpeed highly desired.
- Position three, with emphasis on service-oriented architecture design and implementation, requires significant expertise and recent work experience in Java/J2EE and related technologies such as JSP, Struts, JSF, Servlets, and Spring. Experience with Web service standards such as SOAP or REST and Portal environments such as GridSphere or JetSpeed highly desired.

In addition to the specific requirements for each position described above, each candidate should have the following education and skills:

- Bachelors or higher degree in computer or physical sciences, with emphasis in software engineering, or equivalent education and experience required. Experience in the insurance or reinsurance industry beneficial.
- Experience with UNIX/Linux and Mac OS X or Windows operating systems and with Java, Perl, Python, or UNIX shell script programming required. Good working knowledge of FORTRAN and C beneficial.
- Experience in modern best practices for distributed and test-driven development environments, including use of source control, automated build testing, and issue tracking systems required.
- Demonstrated inter-personal skills in working with customers, peers, and supervisors and in planning team-oriented projects and good written and oral communication skills in English required.
- Understanding of seismology and/or earthquake engineering beneficial.
- Ability to travel occasionally.

The SED offers an attractive working environment in Zurich, consistently rated among the cities with the best quality of life worldwide. The Information Technology Group supports an international and interdisciplinary team of nearly 100 scientists, engineers, and technologists working on a wide range of earthquake-related problems. The working languages at the SED are German and English. SED provides good opportunities for personal and professional development, a competitive salary depending on experience and performance, and an excellent benefits package.

The positions are open immediately, for two to three years with the possibility of extension. We expect to fill the positions at part or full time. Please contact Dr. Greg Anderson (Head, SED IT Group; +41 44 633 24 80) for further information.

Please apply online at [www.jobs.ethz.ch](http://www.jobs.ethz.ch) including a cover letter, your CV, a brief statement of research interests, and the names and contact information of two references. In cases of technical problems regarding the application process, please send your written application by paper with the keyword HAWI 759 to Mr. Hans-Peter Widmer, Human Resources, P.O. Box, 8092 Zürich.

\*\*\*\*\*

**Permanent stable isotope laboratory manager position at University of Basel**

The Institute for Environmental Geoscience (IEG) at the University of Basel is seeking a full-time, permanent laboratory manager for its stable isotope facility. The IEG studies the biogeochemical cycles of biologically important elements and their isotopes in aquatic and soil systems. The laboratory includes two gas-source IRMS with peripherals (EA, Gasbench, GC), a GC-MS, and a TDN/NOx analyzer. The successful candidate will be responsible for the day-to-day operation of the laboratory, maintenance and repair of all major equipment, as well as the supervision of users. The stable isotope laboratory routinely measures H, C N, and O isotope ratios in water, soil, and sediment samples. It is expected that the candidate will be involved in the development and improvement of new methods. Active participation in research is optional.

GEOBULLETIN  
October 24, 2008

Qualifications should include an MSc in Chemistry, Environmental Science, Geoscience or a related discipline, as well experience with stable isotope mass spectrometry and analytical techniques. A background in biogeochemistry, an expertise in compound-specific analyses and/or the analysis of dissolved inorganic nitrogen compounds are an asset but not a requirement. The position is permanent and will be available as of **February 1, 2009**. It offers a competitive salary and full social benefits. Interested applicants should send their application including a CV and names and contact addresses for two references to Prof. Dr. M. Lehmann, Institute for Environmental Geoscience, University of Basel, Bernoullistrasse 30. Application deadline is **15 November 2008**, but applications will be reviewed until the position is filled. For further information please contact [moritz.lehmann\(at\)unibas.ch](mailto:moritz.lehmann@unibas.ch).

\*\*\*\*\*

~ ~ ~ ~ ~ ~ ~ ~ **HAVE A GREAT WEEKEND!** ~ ~ ~ ~ ~ ~ ~ ~